

## A Synthetic Model of the Nickel Superoxide Dismutase Active Site

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**Abstract:** Superoxide dismutase (SOD) is an enzyme that facilitates the disproportionation of the superoxide ion ( $O_2^-$ ) into molecular oxygen and hydrogen peroxide. In living organisms, the  $O_2^-$  radical is produced during cellular respiration, and the SOD enzyme is essential to break down this toxin. SODs are classified by the metal ion at their active sites, and one class contains a nickel ion ( $Ni^{2+}/Ni^{3+}$ ). Nickel superoxide dismutase (NiSOD) is the most recently identified SOD. This project aims to synthesize model complexes of the active site of NiSOD in order to better understand this class of protein. Using 2,2'-dithiodibenzaldehyde (DTDB) as a reactant, a new complex with a Ni(II)-N<sub>2</sub>S<sub>2</sub> active site and a thiolate donor was produced. The model complex will be analyzed to determine its structure and properties.

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